

### REMARKS/ARGUMENTS

Claims 1-30 are pending in the application. Claims 1, 8, 11, 18, 21, and 28 have been amended. Reconsideration is respectfully requested. Applicants submit that the pending claims 1-30 are patentable over the art of record and allowance is respectfully requested of claims 1-30.

Applicants would like to thank Examiner Kravets for holding a telephone interview with their representative, Janaki K. Davda, on April 28, 2006, at 1:00 p.m. (EST). During the telephone interview, Applicants' representative described that the Ji patent application describes one structure (a queue) at a primary storage facility, while the claims are directed to two structures (a first structure and a second structure) at a primary site. Applicants' representative also indicated that the acknowledgement is between the primary site and the host, and not between the primary and secondary sites. Examiner Kravets suggested clarification of the claim language "while not acknowledging completion of write requests to any blocks of data". Applicants' representative agreed to consider amendments to clarify certain terms. No other agreement was reached.

Claims 1-5, 7-15, 17-25, and 27-30 are rejected under 35 U.S.C. 102(a) as being anticipated by Ji (U.S. Pub. No. 2004/0250029). Applicants respectfully traverse.

Claim 1 describes copying one or more blocks of data identified by a first structure at a primary site to form a consistent set of data from the primary site to a secondary site asynchronously. While the primary site is not acknowledging completion of host write requests to any blocks of data, a second structure is created at the primary site, wherein the second structure indicates which blocks of data are modified at the primary site while the consistent set of data is being formed using the first structure.

The Ji patent describes that write transactions for the data are inserted into the write queue, where they are queued for communication to the secondary data storage facility (paragraph 37). The Examiner suggests that the write queue is a second structure, but Applicants respectfully traverse. Claim 1 describes a first structure at a primary site and a second structure at a primary site, while the Ji patent application describes a single queue at a primary storage facility. Also, the claimed second structure indicates which blocks of data are modified at the

primary site while the consistent set of data is being formed using the first structure, which is not anticipated by the queue of the Ji patent application.

Also, the Examiner "interprets acknowledging to be between first and second sites." Amended claim 1 describes that the primary site is not acknowledging completion of host write requests.

Thus, claim 1 is not anticipated by the Ji patent application.

Claims 11 and 21 are not anticipated by the Ji patent application for at least the same reasons as were discussed with respect to claim 1.

Dependent claims 2-5, 7, 12-15, 17, 22-25, and 27 incorporate the language of independent claims 1, 11, and 21 and add additional novel elements. Therefore, dependent claims 2-5, 7, 12-15, 17, 22-25, and 27 are not anticipated by the Ji patent application for at least the same reasons as were discussed with respect to claims 1, 11, and 21.

Claim 8 describes a method for asynchronous copy. Indicators in a first structure at a primary site are updated for one or more blocks of data, wherein each indicator in the first structure indicates whether a corresponding block of data was modified at the primary site since the block of data was last sent to remote storage. While copying the blocks of data identified by the indicators in the first structure as having been modified since the blocks of data were last sent to remote storage, indicators in a second structure at the primary site are updated for the one or more blocks of data, wherein each indicator in the second structure indicates whether a corresponding block of data was modified at the primary site while a consistent set of data is being formed using the first structure.

The Ji patent application describes that a write request at the primary facility causes a write record to be written into a primary log at the primary facility, and the corresponding data for the request is written to a primary copy of the data, which may be stored as one or more logical units at the primary facility. The Examiner submits that the log "of Ji stores all write requests, indicating that the block was modified since the block was last sent to remote since write requests are removed from log once the request is transferred to secondary storage". Applicants respectfully traverse. The Ji patent application describes a log 206 at the primary facility and a log 210 at the secondary facility (FIG. 2; paragraphs 33; 35). In paragraph 67, the Ji patent application describes that operations are preferably collected into batches (e.g.,  $m$ ,  $m+1$ ,  $m+2$ ), and this step includes sending write records and corresponding data to the log 210. That

is, the log 206 of the Ji patent application describes writes to data at the primary facility and log 210 describes write records for the secondary facility. Thus, neither of the logs 206 and 210 of the Ji patent application anticipate the first structure at the primary site that indicates whether a corresponding block of data was modified at the primary site since the block of data was last sent to remote storage.

Also, the Ji patent application describes that write transactions are preferably grouped into send batches prior to forwarding them (paragraph 40), and that all of a send batch may be forwarded to the secondary storage facility before any of a next send batch is forwarded (paragraph 41). Grouping write transactions into batches does not anticipate, while copying the blocks of data identified by the indicators in the *first structure* as having been modified since the blocks of data were last sent to remote storage, updating indicators in a *second structure* at the primary site for the one or more blocks of data, wherein each indicator in the second structure indicates whether a corresponding block of data was modified at the primary site while a consistent set of data is being formed using the first structure.

Thus, claim 8 is not anticipated by the Ji patent application.

Claims 18 and 28 are not anticipated by the Ji patent application for at least the same reasons as were discussed with respect to claim 8.

Dependent claims 9-10, 19-20, and 29-30 incorporate the language of independent claims 8, 18, and 28 and add additional novel elements. Therefore, dependent claims 9-10, 19-20, and 29-30 are not anticipated by the Ji patent application for at least the same reasons as were discussed with respect to claims 8, 18, and 28.

Claims 6, 16, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ji as applied to claim 4 and further in view of Handy. Applicants respectfully traverse.

Dependent claims 6, 16, and 26 incorporate the language of independent claims 1, 11, and 21 and add additional novel elements. Applicants respectfully submit that there is no teaching in the Ji patent application of the claimed *second structure* that indicates which blocks of data are modified at the primary site while the consistent set of data is being formed *using the first structure*.

The Handy reference does not cure the defects of the Ji patent application. For example, the Handy reference does not teach or suggest the claimed second structure that indicates which

blocks of data are modified *at the primary site* while the consistent set of data is being formed *using the first structure*.

Therefore, claims 1, 11, and 21 are not taught or suggested by the Ji patent application and Handy reference, either alone or in combination.

At least by their dependence, claims 6, 16, and 26 are not taught or suggested by the Ji patent application and Handy reference, either alone or in combination, for at least the same reasons as were discussed with respect to claims 1, 11, and 21.

#### Conclusion

For all the above reasons, Applicants submit that the pending claims 1-30 are patentable over the art of record. Applicants have not added any claims. Nonetheless, should any additional fees be required, please charge Deposit Account No. 09-0466.

The attorney of record invites the Examiner to contact her at (310) 553-7973 if the Examiner believes such contact would advance the prosecution of the case.

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